

SYNOPSIS OF THE GENUS *BURMEISTERA* (CAMPANULACEAE: LOBELIOIDEAE) IN PERU¹

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ABSTRACT

The southern distributional limit of *Burmeistera* has long been obscured by the inclusion in that genus of several disharmonious elements from central and southern Peru. Of the six Peruvian species that have previously been assigned to *Burmeistera*, only *B. ramosa* is retained in that genus. The recent collection of *B. microphylla* brings the number of Peruvian species of *Burmeistera* to two. The southernmost stations known for these two species, and thus the genus as a whole, are at approximately 5°50'S in San Martín Department of northern Peru.

Burmeistera Triana is a well-delimited neotropical genus of Lobelioideae distinguished from other baccate-fruited genera by the combination of oblong or linear seeds, oblique and distally open anther tubes, and mostly nonbracteolate pedicels. The typically distorted, greenish to maroon corollas make the genus easily recognizable in the field. However, complex morphological patterns, in particular extreme local differentiation, render it taxonomically challenging at the species level.

Burmeistera is found primarily in montane wet forests from Chiapas, Mexico south to Venezuela and Peru, with its center of diversity in the Andes of Colombia and Ecuador. The southern distributional limits of the genus have been problematic, owing to the questionable inclusion of several central and southern Peruvian taxa. This paper clarifies the status of *Burmeistera* in Peru and establishes its currently known southern limit.

Six Peruvian species of *Burmeistera* were included in the *Flora of Peru* (Wimmer, 1937) and in Wimmer's (1943) revision of the genus, the most recent treatment available. These are: *Burmeistera asteriscus* F. Wimmer, *B. macrocarpa* (A. Zahlbr.) F. Wimmer, *B. peruviana* F. Wimmer, *B. ramosa* F. Wimmer, *B. tricolorata* F. Wimmer, and *B. weberbaueri* A. Zahlbr. Of these, only *B. ramosa* is retained in *Burmeistera* as the genus is presently circumscribed. McVaugh (1949) correctly noted the position of *B. macrocarpa*, *B. peruviana*, and *B. asteriscus* in *Centropogon* and made the necessary transfers for the last two. The two remaining species clearly belong in *Siphocampylus* and are discussed below.

An additional species, *Burmeistera microphylla* J. D. Smith, was recently collected in northern Peru, bringing the number of Peruvian species to two. This collection at approximately 5°50'S in San Martín Department, along with a recent collection of *B. ramosa* from the same general vicinity, represents the southernmost stations known for the genus.

The erroneous inclusion of several southern and central Peruvian taxa in *Burmeistera* has obscured an interesting phytogeographic pattern. The Huancabamba deflection of northern Peru marks the distributional limit for a number of plant and animal groups and appears to have been a significant barrier to north-south migration (Simpson, 1975, 1979; Berry, 1982; Vuilleumier, 1984). The geographical range of *Burmeistera* as defined here provides another example of the Huancabamba deflection comprising the boundary for a group. Although approximately 30 species are present in Ecuador (Jeppesen, 1981), diversity in the genus falls abruptly in northern Peru, where only two species are known to occur. In Peru, these species have been found only in the area along or near the Río Marañón gap, the lowest elevation depression along the eastern slope of the Central Andes and a major component of the Huancabamba deflection.

Why *Burmeistera* is absent from apparently suitable habitats further south along the eastern slope of the Peruvian Andes remains a mystery. The relatively low elevation of the Río Marañón gap (ca. 500 m) does not alone explain the pattern, since *B. ramosa* and other species occur at such elevations. Furthermore, members of the

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genus are capable of dispersal past such barriers, as evidenced by their successful establishment in areas across far more formidable low-elevation gaps, in one instance reaching the isolated Cerro de la Neblina massif of the Guayana Highland. The complex patterns of local differentiation and endemism in *Burmeistera* suggest that dispersal may often be quite limited, even though the variously spongy, juicy, or inflated fruits often appear well suited for bird-dispersal. In this regard it may be significant that *B. microphylla* is one of the widest-ranging members of the genus, extending from Costa Rica to northern Peru. An additional factor may be our insufficient knowledge of the middle and upper-elevation forests along the eastern Andean slopes of northern Peru. These inaccessible areas are among the most poorly collected in the Andes.

KEY TO THE SPECIES OF *BURMEISTERA* IN PERU

- 1a. Leaves thick and coriaceous when dry; sepals 5–8 mm long, divaricate; fruit spongy, less than 10 mm in diameter *B. microphylla*
 1b. Leaves chartaceous to membranaceous when dry; sepals 2–5 mm long, erect or spreading; fruit inflated, to 25 mm in diameter ... *B. ramosa*

1. *Burmeistera microphylla* J. D. Smith, Bot. Gaz. (London) 25: 146. 1898.

The single Peruvian collection, as well as collections from southern Ecuador treated by Jeppesen (1981) under the synonym *B. aurobarbata* F. Wimmer, differ from typical Central American *B. microphylla* in their more uniformly lanceolate to narrowly lanceolate leaves and in lacking golden external anther trichomes. Further investigation of geographically intermediate populations of this wide-ranging and variable species complex (including *B. crassifolia* F. Wimmer and *B. maculata* F. Wimmer) may indicate that these southernmost populations warrant treatment as a distinct taxon.

Specimen examined. PERU. SAN MARTIN: PROV. Rioja, 100 km W of Rioja on road to Pedro Ruíz, 2 km E of Puente Río Nieva (border with Amazonas Dept.), 2,000 m, 16 Feb. 1985, Stein & Todzia 2198 (MO).

2. *Burmeistera ramosa* F. Wimmer, Repert. Spec. Nov. Regni Veg. 30: 16. 1932.

This species is now known from two collections in Peru. The type, *Tessmann 4725*, was collected at a relatively low elevation at the mouth

of the Río Santiago along the Río Marañón, not “near Iquitos” as indicated by Wimmer (1937). The second, a fruiting collection, was made in 1983 in the Venceremos region from mid-elevation cloud forest. *Burmeistera ramosa* is apparently more common in Ecuador (Jeppesen, 1981) and shows a similar wide range in elevational preference. Since the early botanical explorers Ruiz and Pavón never ventured into northeastern Peru (Steele, 1964) where this species would be expected, one of their collections, formerly thought to originate from Peru (Wimmer, 1943), was probably among the Ecuadorean collections made by their apprentice J. Tafalla.

Specimens examined. PERU. AMAZONAS: Río Marañón, Pongo de Manseriche, 160 m, *Tessmann 4725* (NY; photographs, MO, NY). SAN MARTIN: Rioja Prov., Pedro Ruíz–Moyobamba rd., km 390, Venceremos, 1,770–2,150 m, 5–7 Aug. 1983, *Smith & Vasquez 4608* (MO).

EXCLUDED SPECIES

1. *Burmeistera asteriscus* F. Wimmer, Repert. Spec. Nov. Regni Veg. 38: 5. 1935. = *Centropogon peruvianus* (F. Wimmer) McVaugh, Brittonia 6: 462. 1949. See discussion under *Burmeistera peruviana*.
2. *Burmeistera macrocarpa* (A. Zahlbr.) F. Wimmer, Repert. Spec. Nov. Regni Veg. 30: 41. 1935. = *Centropogon macrocarpus* A. Zahlbr., Bot. Jahrb. Syst. 37: 452. 1906.
3. *Burmeistera peruviana* F. Wimmer, Repert. Spec. Nov. Regni Veg. 38: 5. 1935. = *Centropogon peruvianus* (F. Wimmer) McVaugh, Brittonia 6: 462. 1949.

Field studies conducted at the type locality of *Centropogon peruvianus* and *C. asteriscus* around Pillahuata, Cuzco Department, show that the differences noted by Wimmer (1935) in describing these two species, primarily leaf width and shape and sepal length, are variable within populations. The type specimens of these two species were collected in the same general vicinity and merely represent upper and lower elevation collections (3,000–3,300 m and 2,200–2,400 m) of a single species. The names were published simultaneously; however, since McVaugh (1949) selected *C. peruvianus* as the type species for his *Centropogon* sect. *Peruviani*, *C. peruvianus* is the preferred name.

4. *Burmeistera tricolorata* F. Wimmer, Repert. Spec. Nov. Regni Veg. 30: 22. 1932. = *Siphocampylus rusbyanus* Britton, Bull. Torrey Bot. Club 19: 372. 1892.

A fruiting collection of this species (*Stein 2505*) made recently at the type locality of *B. tricolorata* has capsular fruits and firmly establishes its position in the genus *Siphocampylus*. The Peruvian collections closely match *Siphocampylus rusbyanus*, a species recognized previously only from northern Bolivia.

5. *Burmeistera weberbaueri* A. Zahlbr., Bot. Jahrb. Syst. 37: 451. 1906. = *Siphocampylus oscitans* B. A. Stein.

A new collection of this species (*Stein 3831*) has shown the fruit to be capsular, excluding it from *Burmeistera*. For a discussion of this species, its transfer to *Siphocampylus*, and the necessary proposal of a new name (the epithet *weberbaueri* has been used previously in *Siphocampylus*), see the accompanying paper (Stein, 1987).

The above two species, *Burmeistera weberbaueri* and *B. tricolorata*, comprise Wimmer's (1943) subsect. *aequilatae* of *Burmeistera* sect. *imberbes* F. Wimmer. Since both of these species are here excluded from *Burmeistera*, that strictly Peruvian subsection is no longer recognized.

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